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(54) **SHELF**

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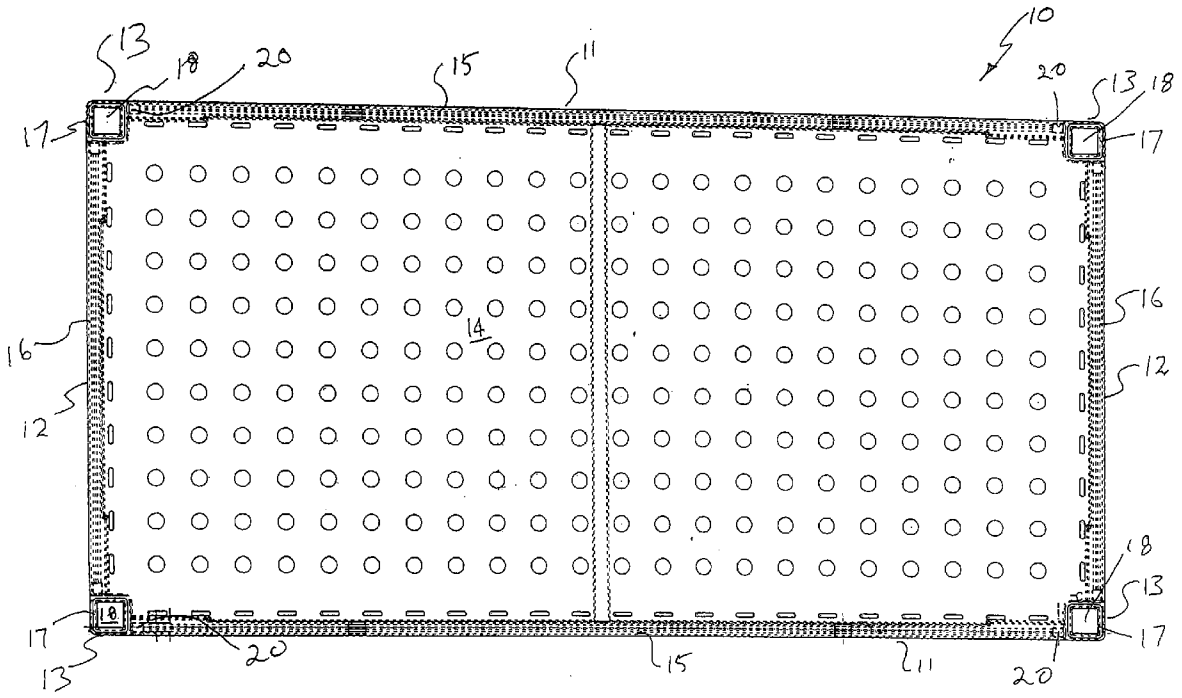
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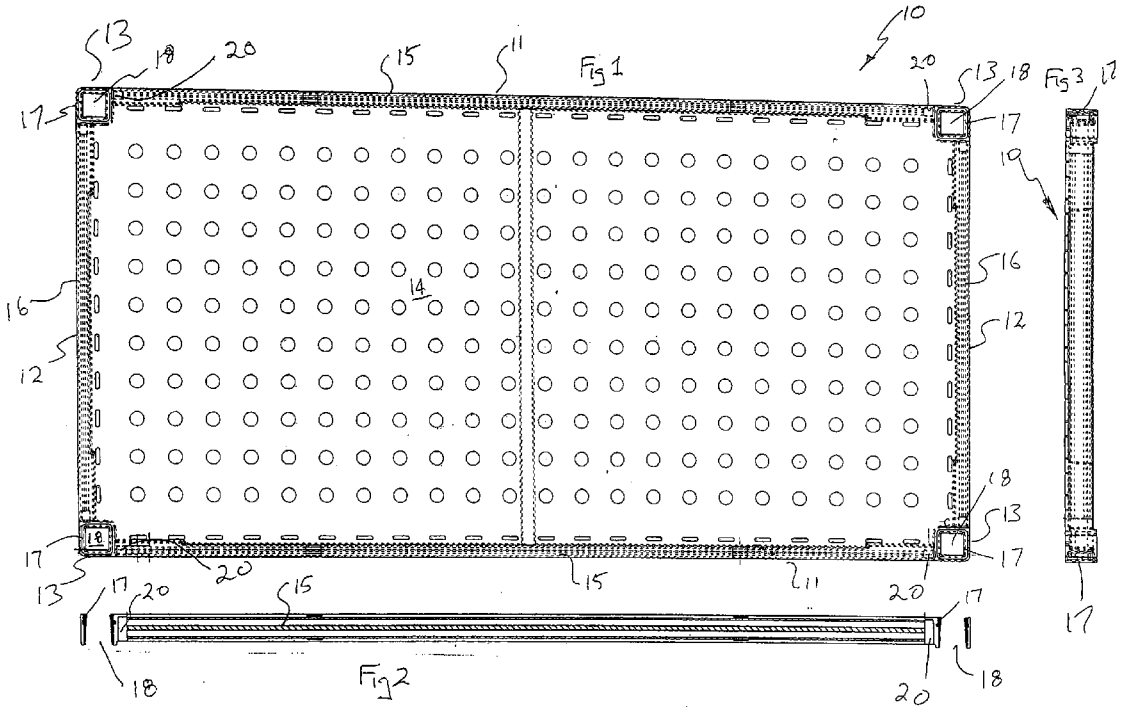
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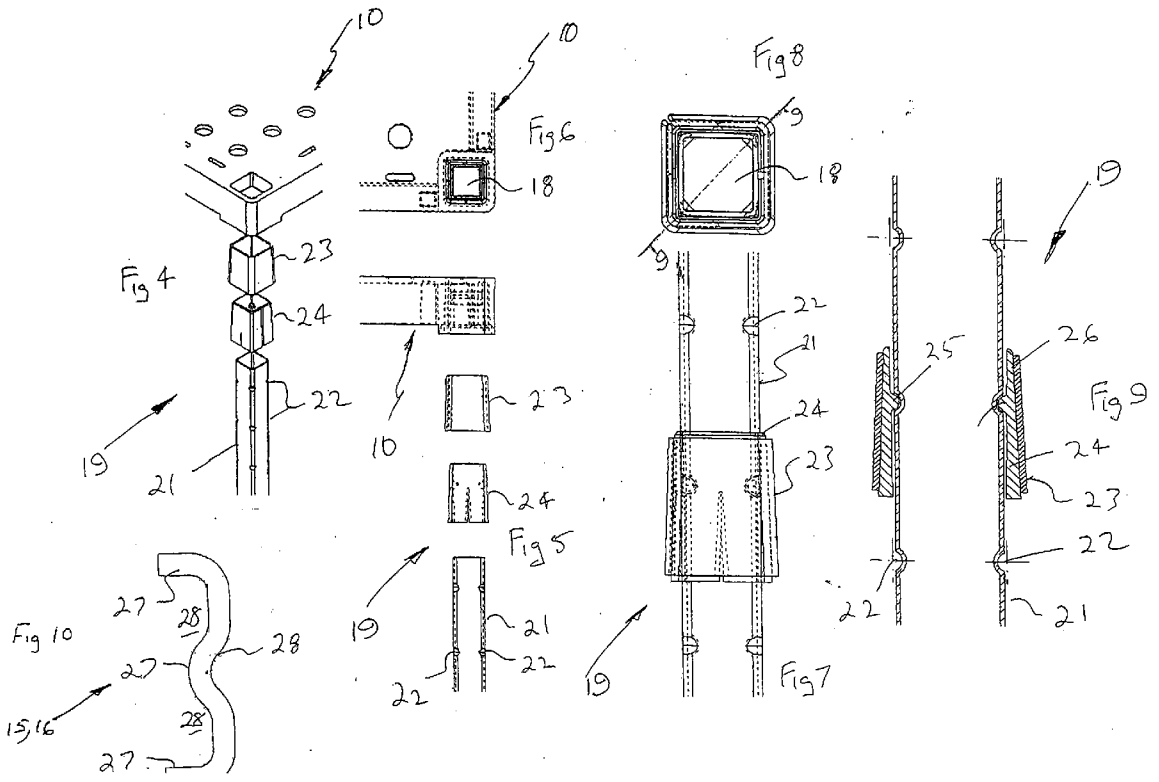
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(57) **ABSTRACT**

A shelf (**10**) that is of a square or rectangular configuration so as to have a first pair of sides (**11**) that are generally parallel and transversely spaced and generally perpendicular to the sides (**11**). The shelf (**10**) has a body (**14**) injected of moulded plastics material with elongated frame members (**15**, **16**) moulded within the body (**14**).




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Fig 1
Fig 2
Fig 3


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Fig 9
Fig 10
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SHELF

TECHNICAL FIELD

[0001] The present invention relates to shelves and more particularly to shelves formed of mould plastics material.

BACKGROUND OF THE INVENTION

[0002] Typical shelving includes generally upright posts that support one or more generally horizontally oriented shelves. The shelves have sockets that receive the posts so as to be secured thereto.

[0003] It is not uncommon to form the shelves with a metal frame about which there is moulded a body of plastics material.

[0004] The abovementioned shelves have the disadvantage that frequently the shelf twists due to stresses within the shelf. Accordingly the shelf is no longer generally planar.

OBJECT OF THE INVENTION

[0005] It is the object of the present invention to overcome or substantially ameliorate the above disadvantage.

SUMMARY OF THE INVENTION

[0006] There is disclosed herein a shelf of generally square or rectangular configuration so as to have four sides and four corners, the shelf including: a pair of elongated frame members, the frame members being generally parallel and transversely spaced, each frame member being located adjacent a respective side of the shelf;

[0007] an insert at each corner to be engaged by a post that supports the shelf;

[0008] a body moulded of plastics material with the frame members and inserts embedded in the body; and wherein

[0009] a space is provided between each insert and adjacent frame member.

[0010] Preferably, the pair of frame members is a first pair of frame members, and the shelf includes a second pair of elongated frame members, the second frame members being generally parallel and transversely spaced, and generally perpendicular to the first members, with the inserts being spaced from each adjacent frame member, and the second frame member being located adjacent a respective one of the sides.

[0011] Preferably, the body is injection moulded with each frame member and insert embedded in the body as the body is injection moulded.

[0012] Preferably, each frame member is metal.

[0013] Preferably, each insert is metal.

[0014] Preferably, each insert is of a generally square transverse cross section so as to provide for upwardly extending sides surrounding a hollow to receive an associated post, with said sides converging upwardly.

[0015] Preferably, each frame member is non planar so as to have longitudinally extending recesses and/or ridges.

[0016] Preferably, each frame member has smooth external surfaces.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] A preferred form of the present invention will now be described by way of example with reference to the accompanying drawings wherein:

[0018] FIG. **1** is a schematic top plan view of a shelf;

[0019] FIG. **2** is a schematic sectioned side elevation of the shelf of FIG. **1**;

[0020] FIG. **3** is a schematic end elevation of the shelf of FIG. **1**;

[0021] FIG. **4** is a parts exploded isometric view of portion of the shelf of FIG. **1** and a post;

[0022] FIG. **5** is a schematic side elevation of the post and shelf as seen in FIG. **4**;

[0023] FIG. **6** is a schematic top plan view of the shelf and post as seen in FIG. **5**;

[0024] FIG. **7** is a schematic side elevation of the post of FIGS. **4** and **5**;

[0025] FIG. **8** is schematic top plan view of the post of FIG. **7**;

[0026] FIG. **9** is a schematic sectioned side elevation of the post as shown in FIG. **8** sectioned along the line **9-9**; and

[0027] FIG. **10** is a schematic end elevation of a frame member employed in the shelf of FIG. **1**.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0028] In the accompanying drawings there is schematically depicted a shelf **10**. The shelf **10** may be of a square or rectangular configuration so as to have a pair of first sides **11** that are generally parallel and transversely spaced, and a pair of second sides **12** that s are generally parallel and transversely spaced, and generally perpendicular to the sides **11**. The shelf **10** also has four corners **13**.

[0029] The shelf **10** has a body **14** injection moulded of plastics material. When the body **14** is moulded, the mould includes a frame including a first pair of elongated frame members **15** and a second pair of elongated frame members **16**. The frame members **15** are generally parallel and transversely spaced. The frame members **16** are also generally parallel and transversely spaced but generally perpendicular to the frame members **15**. At each corner there is provided an insert **17**. Each insert **17** provides a socket **18** within which a post **19** is received. Each frame member **15/16** is located adjacent a respective side **11/12**.

[0030] Preferably each of the members **15/16** and inserts **17** are formed of metal, preferably steel.

[0031] When moulding the body **14**, the members **15/16** and insert **17** are located in the mould. However the members **15/16** are positioned so that there is a gap **20** between each member **15/16** and its adjacent inserts **17**. The gaps **20** provide for shrinking of the body **14** and movement between the body **14** and the members **15/16**. By providing for this relative movement, the shelf **10** is less likely to deform when the body **14** cools.

[0032] Each socket **18** is of a generally square transverse cross section so as to receive the post **19**. The post **19** includes a post member **21** that has a plurality of spaced recesses **22** that enable the shelf **10** to be located at a desired height. Engaged in each socket **18** is a first post sleeve **23** through which the post member **20** passes, and a securing sleeve **24** that is located between the sleeve **23** and the post member **21**. As best seen in FIGS. **8** and **9**, each securing sleeve **24** includes projections **25** that engage within a selected group of recesses **22** to secure the shelf **10** at a desired height relative to the post member **21**. As is best seen in FIG. **9**, the securing sleeve **24** has upwardly converging sides **26**, while each associated sleeve **23** has four sides that taper upwardly so as to engage with the sides **26** so as to wedge the projections **25** in the associated engaged recesses **22**.

[0033] As best seen in FIG. **10**, each frame member **15/16** is not planar and preferably includes longitudinally extending ridges **27** and longitudinally extending recesses **28**. Each member **15/16** has a smooth external surface so as to aid in movement of the body **14** relative to the members **15/16** when the body **14** is cooling (shrinking). Preferably, each member **15/16** has a thickness of about 2.5 to 3 mm. Such a thickness enables each reinforcing member **15/16** to penetrate any plastics material that may cover an end of the members **15/16** adjacent the gaps **20**.

1. A shelf of generally square or rectangular configuration so as to have four sides and four corners, the shelf including:

a pair of elongated frame members, the frame members being generally parallel and transversely spaced, each frame member being located adjacent a respective side of the shelf;

an insert at each corner to be engaged by a post that supports the shelf;

a body moulded of plastics material with the frame members and inserts embedded in the body; and wherein

a space is provided between each insert and adjacent frame member.

2. The shelf of claim **1**, wherein the pair of frame members is a first pair of frame members, and the shelf includes a second pair of elongated frame members, the second frame members being generally parallel and transversely spaced, and generally perpendicular to the first members, with the inserts being spaced from each adjacent frame member, and the second frame member being located adjacent a respective one of the sides.

3. The shelf of claim **1**, wherein the body is injection moulded with each frame member and insert embedded in the body as the body is injection moulded.

4. The shelf of claim **1**, wherein each frame member is metal.

5. The shelf of claim **1**, wherein each insert is metal.

6. The shelf of claim **1**, wherein each insert is of a generally square transverse cross section so as to provide for upwardly extending sides surrounding a hollow to receive an associated post, with said sides converging upwardly.

7. The shelf of claim **1**, wherein each frame member is non planar so as to have longitudinally extending recesses and/or ridges.

8. The shelf of claim **1**, wherein each frame member has smooth external surfaces.

9. The shelf of claim **2**, wherein the body is injection moulded with each frame member and insert embedded in the body as the body is injection moulded, with each frame member is metal.

10. The shelf of claim **9**, wherein each insert is metal.

11. The shelf of claim **9**, wherein each insert is of a generally square transverse cross section so as to provide for upwardly extending sides surrounding a hollow to receive an associated post, with said sides converging upwardly.

12. The shelf of claim **9**, wherein each frame member is non planar so as to have longitudinally extending recesses and/or ridges.

13. The shelf of claim **12**, wherein each frame member has smooth external surfaces.

14. A shelf of generally square or rectangular configuration so as to have four sides and four corners, the shelf including:

a pair of elongated metal frame members, the frame members being generally parallel and transversely spaced, each frame member being located adjacent a respective side of the shelf;

a metal insert at each corner to be engaged by a post that supports the shelf;

a body injection moulded of plastics material with the frame members and inserts embedded in the body so that there is a space is provided between each insert and adjacent frame member, and wherein the pair of frame members is a first pair of frame members, and the shelf includes a second pair of elongated metal frame members, the second frame members being generally parallel and transversely spaced, and generally perpendicular to the first members, with the inserts being spaced from each adjacent frame member, the second frame member are located adjacent a respective one of the sides, and each insert is of a generally square transverse cross section so as to provide for upwardly extending sides surrounding a hollow to receive an associated post, with said sides converging upwardly.

15. The shelf of claim **14**, wherein each frame member is non planar so as to have longitudinally extending recesses and/or ridges.

16. The shelf claim **15**, wherein each frame member has smooth external surfaces.

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